

1. A thermal energy storage composition comprising macrocapsules containing therein a plurality of microcapsules wherein said microcapsules contain a phase change material.

2. The thermal energy storage composition of claim 1 wherein said macrocapsules have a payload of at least 50% phase change material by weight.

3. The thermal energy storage composition of claim 2 wherein said macrocapsules have a payload of at least 75% phase change material by weight.

4. The thermal energy storage composition of claim 3 wherein said macrocapsules have a payload of at least 80% phase change material by weight.

5. The thermal energy storage composition of claim 1 wherein said macrocapsules have a particle size of from about 1000 to 10,000 microns.

6. The thermal energy storage composition of claim 4 wherein said macrocapsules have a particle size of from about 1000 to 10,000 microns.

7. The thermal energy storage composition of claim 1 wherein said phase change material is a paraffin hydrocarbon selected from the group consisting of: n-Octacosane, n-Heptacosane, n-Hexacosane, n-Pentacosane, n-Tetracosane, n-Tricosane, n-Docosane, n-Homeiocosane, n-Eicosane, n-Nonadecane, n-Octadecane, n-Heptadecane, n-Hexadecane, n-Pentadecane, n-Tetradecane, n-Tridecane, and combinations thereof.

8. The thermal energy storage composition of claim 7 wherein said phase change material comprises n-Octadecane.

9. The thermal energy storage composition of claim 1 wherein said microcapsules have an average particle size of from about 2 to 50 microns.

10. The thermal energy storage composition of claim 1 wherein said macrocapsule comprises a crosslinked gelling agent.

11. The thermal energy storage composition of claim 10 wherein said crosslinked gelling agent is selected from the group consisting of alginate, polyvinyl alcohol, sodium silicate and gelatin.

12. The thermal energy composition of claim 1 wherein said energy storage composition is incorporated inside a coat, vest or other article of clothing.

13. The thermal energy storage composition of claim 1 wherein said composition is incorporated into construction materials, home furnishings, automobile upholstery, or heat sinks.

14. A method for producing macrocapsules containing a plurality of microcapsules therein, said method comprising:

- a. providing a plurality of microcapsules;
- b. suspending said plurality of microcapsules in a gelling agent solution thereby forming a suspension of said microcapsules in said gelling agent solution;
- c. adding said suspension of microcapsules as discrete drops to a crosslinking solution thereby crosslinking said gelling agent coating and forming discrete macrocapsules wherein each macrocapsule contains a plurality of microcapsules; and
- d. drying said macrocapsules.

15. A method for producing macrocapsules in accordance with claim 14 wherein said microcapsules contain a phase change material.

16. A method for producing macrocapsules in accordance with claim 15 wherein said phase change material is selected from the group consisting of: n-Octacosane, n-Heptacosane, n-Hexacosane, n-Pentacosane, n-Tetracosane, n-Tricosane, n-Docosane, n-Homeiocosane, n-Eicosane, n-Nonadecane, n-Octadecane, n-Heptadecane, n-Hexadecane, n-Pentadecane, n-Tetradecane and n-Tridecane.

17. A method for producing macrocapsules in accordance with claim 14 wherein said macrocapsules have an average particle size of 1000 to 10,000 microns.

18. A method for producing macrocapsules in accordance with claim 14 wherein said gelling agent is selected from the group consisting of polysaccharides, nonionic polymers, inorganic polymers, polyanions and polycations.

19. A method for producing macrocapsules in accordance with claim 18 wherein said gelling agent is alginate.

20. A method for producing macrocapsules in accordance with claim 14 wherein said crosslinking solution comprises cations selected from the group consisting of sodium, magnesium, calcium, zinc, barium, strontium, aluminum, iron, manganese, nickel, cobalt, copper, cadmium, lead, and mixtures thereof.